PEARL RIVER COUNTY, MISSISSIPPI
Cooperating Technical Partners
Mapping Activity Statement

Mapping Activity Statement No. #2 – Digital Flood Insurance Rate Map Production and Development of Updated Flood Data

In accordance with the Cooperating Technical Partners (CTP) Partnership Agreement dated September 21, 2000, between Pearl River County, MS and the Federal Emergency Management Agency (FEMA), Mapping Activity Statement (MAS) No. 3 is as follows.

SECTION 1—OBJECTIVE AND SCOPE

The objective of the Flood Map Project documented in this MAS is to develop a Digital Flood Insurance Rate Map (DFIRM) and Flood Insurance Study (FIS) report for Pearl River County, MS. The DFIRM and FIS report will be produced in the FEMA Countywide Format. The DFIRM will use NAVD88 datum.

Existing geographic information system (GIS) data and study needs for the community will be researched, obtained, organized and provided in accordance with Activity 1. Scoping will be necessary to determine the final scope of work for this project.

In addition the Mapping Partners involved in this project will develop new and/or updated flood hazard data, as summarized in the table below.

Flooding Source	Reach Limits	Reach Length	Detailed Riverine		Limited Detail Study	Redelin-eation of SFHAs Using Effective Profiles	Refine/ Establish Zone A
			Hydrology	Hydraulics			

This Flood Map Project will be completed by the following:

- Pearl River County;
- Camp Dresser and McKee Inc. (CDM) and its subcontractor(s);
- FEMA and its Contractor(s);
- National Service Provider (NSP)

The CTP shall notify FEMA and the NSP by e-mail of all meetings with community officials at least one week prior to the meeting (with as much notice as possible). FEMA and/or the NSP may or may not attend the community meetings

The activities for this Flood Map Project, including required Quality Assurance/Quality Control (QA/QC) reviews, and the Mapping Partners that will complete them are summarized in the table below. The sections of this MAS that follow the table below describe the specific activities, responsible Mapping Partner(s), FEMA standards that must be met, and resultant map components.

Activities	CTP	FEMA
Activity 1 – Scoping	X	
Activity 2 - Outreach	X	
Activity 3 – Field Surveys and Reconnaissance	X	
Activity 5 – Independent QA/QC Review of Topographic Data	X	X
Activity 6 –Hydrologic Analyses	X	
Activity 7–Independent QA/QC Review of Hydrologic Analyses	X	X
Activity 8 – Hydraulic Analyses	X	
Activity 9 – Independent QA/QC Review of Hydraulic Analyses	X	X
Activity 10 – Floodplain Mapping (Detailed Riverine or Coastal Analysis)	X	
Activity 10B – Floodplain Mapping (Refinement or Creation of Zone A)	X	
Activity 11 – Independent QA/QC Review of Floodplain Mapping (Revised Areas)	X	X
Activity 14 – DFIRM Production (Merge Revised and Non-Revised Information)	X	
Activity 14A – Application of DFIRM Graphic and Database	X	

Activities	CTP	FEMA
Specifications		
Activity 14B – Independent QA/QC Review of DFIRM Product Meeting FEMA Graphic and Database Specifications	X	X
Activity 15 – Preliminary DFIRM and FIS Report Distribution	X	
Activity 16 – Post-Preliminary Processing	X	X

FEMA has developed tools to assist in the development of the flood hazard data studies and the Digital Flood Insurance Rate Maps (DFIRMs) if the CTP wishes to use them. FEMA will, through the NSP, provide all CTPs access to and training in these tools. The tools available at this time include WISE software and the DFIRM production tools. The use of these tools will improve the Map Modernization and efficiency of all mapping partners.

As the various production tools become available, Pearl River County plans to use them to the fullest extent possible to accomplish our task orders on schedule and budget. Although Pearl River County will utilize all of the available tools to perform each task, until Pearl River County becomes familiar with their capabilities and confident in the results they produce, Pearl River County will continue to plan its work using existing mapping processes.

If Pearl River County chooses not to use these production tools, then Pearl River County will be required to submit intermediate project data at major milestones in each Mapping Project in accordance with Data Capture Standards. Submitting data in these standards will aid in more efficient quality control reviews, data storage, archiving, and for future study updates.

The Data Capture Standard submittals will be required at the following study milestones:

- Project Scoping
- Terrain Data Processing Completed
- Field Survey Completed
- Hydrology Completed (draft and final)
- Hydraulics Completed (draft and final)
- Coastal Analysis Completed (draft and final)
- DFIRM Mapping (draft and preliminary)

QA/QC review activities may be performed by CTPs or the NSP at the discretion of FEMA. Please note the NSP will also be performing periodic audits and overall study/project management to ensure study quality.

FEMA will be providing download/upload capability for intermediate data submittals through the Management Information Portal (MIP). Data submittals uploaded via the MIP, will include the same data required prior to the existence of the MIP.

Activity 1 – Scoping

Responsible Mapping Partner: Pearl River County and/or its contractor, CDM

Scope: This task involves collecting data from a variety of sources including community surveys, other Federal and State Agencies, NFIP State Coordinators, Community Assistance Visits (CAV's) and FEMA archives. CDM will evaluate the effective FIS report and FIRM maps to see if it needs to be updated. Lists of mapping needs will be obtained from the Mapping Needs Updated Support System (MNUSS) database, community surveys and CAV's if available.

Data collection will include obtaining the best available base map materials (corporate limits, roads, orthophotos, etc) along with stream centerline files. The acquired data will be imported into the scoping tool and used during the Scoping Task. In the Scoping Tool, all streams should have unique names, the limits of the effective FEMA studies should be identified, Letter of Map Change (LOMC) areas should be identified, and community requests should be identified. This task also includes populating the streamlines with existing pipeline and scoped studies currently underway.

In cooperation with the FEMA Region, a Project Management Team will be established consisting of the Pearl River County and its contractor, FEMA's regional engineer, City of Picayune, and other appropriate officials. The Project Management Team will be responsible for coordinating the activities of this project and completing all tasks identified in this Statement of Work.

Preliminary Research Activities can be separated into two categories—researching effective information and researching available data for the Flood Map Project. The following tasks shall be completed to research effective information: inventory the FEMA archives for effective FIRM panels, FRFM panels, FIS reports, and other flood hazard data or existing study data; summarize the information in the MNUSS database; summarize contiguous community agreement checks; review CAV and CAC files; and develop a "scoping map" and an overview of the results of the research.

CDM will co-ordinate, set-up, and hold the Scoping Meeting. This includes identifying a time, place, and all participants. The purpose of this meeting is to present the current information to the local officials (state, county and municipal) and coordinate on prioritization and identification of study areas. CDM shall be responsible for compiling the necessary information for the meeting. These items may include: FIS and FIRM for affected communities; USGS quads for the study area; best available community base map(s); effective FIRM summary; Available Data Inventory; Scoping Map; Scoping Meeting Agenda/Minutes form; Aerial photos/topographic mapping if available; existing drainage studies or other H&H data; Community master plan(s)/Drainage Master Plan(s); Zoning Maps; Street Maps; As-built plans; and Floodplain Ordinance(s).

The project management team shall review the initial mapping needs list, review the research findings, and make selections of proposed methods for obtaining/producing flood data. Any additions or changes to the needs list shall be discussed with all members. All needs shall also be prioritized. In general, highest priority shall be given to the following areas: areas of dense existing or anticipated development, including areas where new road crossings have been constructed over stream(s); areas affected by flood-control structures and/or channelization; areas where natural physical changes in the floodplain have been significant (due to subsidence or extreme erosion, for example); areas that were studied by approximate methods and unmapped areas, especially those with development pressure; areas where the community has experienced flooding outside mapped floodplains, with severe damage to buildings and/or infrastructure; areas where mapped flood hazards do not match those shown on contiguous FIRMs (unless those FIRMs are not considered to be accurate); and areas where flood data (Base Flood Elevations (BFEs), floodplains, and regulatory floodways) are likely to be changed the most by a restudy.

Based on the discussion of mapping needs, Pearl River County and FEMA Project Officer will finalize the areas to be included in the project (based on recommendations provided by the Project Team). Areas

to be studied by detailed and approximate methods shall be identified. The following issues will be discussed and refined: Review and Refinement of Flood Hazard Identification Methodologies, Review of Proposed Paneling Scheme, Review and Refinement of Base and Topographic Map Source, and Finalization of Map Production and Database Options.

Standards: All work under Activity 1 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: The Final Scoping Report shall be delivered with all of the components as laid out in the attached "Partner Flood Map Modernization Program Scoping Report" template in Appendix A in accordance with the schedule outlined in Section 6 for this Activity.

Activity 2 – Outreach

Responsible Mapping Partner: Pearl River County and/or its contractor, CDM

Scope: The outreach activities for a Flood Map Project can best be understood as a process that begins during the Project Scoping phase and continues through the Map Production and Post-preliminary phases. A regulatory overview of required activities is followed by a description of tools that can be used in working with stakeholders to keep them informed and to solicit their input.

The overarching goal for conducting outreach is to create a climate of understanding and ownership of the mapping process at the State and local levels. Well-planned outreach activities can reduce political stress, confrontation in the media, and public controversy, which can arise from lack of information, misunderstanding, or misinformation. These outreach activities also can assist FEMA and other members of the Project Team in responding to congressional inquiries.

All communication with local governments will be done in accordance with Title 44 Code of Federal Regulations Part 66.

Standards: All work under Activity 2 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: Upon determination of an Outreach and Coordination Approach, the Contractor shall deliver the following to the FEMA Regional Project Officer in accordance with the schedule outlined in Section 6 for this Activity:

- A report detailing outreach and coordination activities.
- Backup or supplemental information used in writing this report.
- At the completion of DFIRM process, Pearl River County will submit a summary of outreach activities and any changes made in the outreach approach based on the actual implementation.

Activity 3 - Field Surveys and Reconnaissance

Responsible Mapping Partner: Pearl River County and/or its contractor, CDM

Scope: To supplement any field reconnaissance conducted during the Project Scoping phase of this project, CDM shall conduct a detailed field reconnaissance of the specific study area to determine conditions along the floodplain(s), types and numbers of hydraulic and/or flood-control structures,

apparent maintenance or lack thereof of existing hydraulic structures, locations of cross sections to be surveyed, and other parameters needed for the hydrologic and hydraulic analyses.

In addition to the initial field reconnaissance, CDM shall conduct field surveys, including obtaining channel and floodplain cross sections, identifying or establishing Temporary Bench Marks, and obtaining the physical dimensions of hydraulic and flood-control structures. In addition, CDM shall use any existing information in regards to the physical dimension of hydraulic and flood-control structures and surveys previously performed. CDM also shall coordinate with other Mapping Partners that are collecting topographic data under Activity 4.

Standards: All work under Activity 3 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the Technical Support Data Notebook (TSDN) format described in described in Appendix M of Guidelines and Specifications for Flood Hazard Mapping Partners, CDM shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Activity:

- A report summarizing the findings of the field reconnaissance;
- Maps and drawings that provide the detailed survey results; and
- Survey notebook containing cross sections and structural data.
- NSP Format Survey Database or Data Delivery consistent with the NSP Data Capture Standards – Draft Appendix N.

Appendix M and N may be downloaded from the FEMA Flood Hazard Mapping Web site at at http://www.fema.gov/fhm/dl_cgs.shtm.

Task 4 – Topographic Data Development

Responsible Entity: Pearl River County's contractor, CDM

Scope: To supplement the field surveys conducted under Task 3 of this MAS, additional topographic data of the overbank areas of flooding sources has been obtained to delineate floodplain boundaries. Specifically, new topographic data has been generated for flooding sources using a method for collecting additional topographic data (method will be identified in each contract task order). If automated Hydrologic & Hydraulics (H&H) is used, this task shall include the development of topographic maps and/or Digital Elevation Models (DEM's) for the subject flooding sources using the data collected in Task 3 and 4. In addition, the Contractor shall address all concerns or questions regarding this Task raised during the independent QA/QC review

Standards: All work conducted under this task shall conform to the standards specified for this task in Section 5, "Applicable Standards" of this MAS. In the event of any contradictions between the MAS and the standards, the standards shall control.

Deliverables: Deliverables shall be project specific and determined during Scoping. Upon completion of topographic data collection and processing for flood sources, this data shall be submitted to the FEMA Regional Project Officer in accordance with the delivery dates specified in task orders:

- In accordance with the Technical Support Data Notebook (TSDN) format described in described in Appendix M of Guidelines and Specifications for Flood Hazard Mapping Partners, CDM shall make

the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Activity–

- Hardcopy topographic maps.
- Completed Form No. 5 of National Flood Insurance Program Maps, Application/Certification Forms and Instructions (MT-2).
- Report summarizing methodology and results.
- Triangular Irregular Network (TIN) data on CD-ROM.
- DEM's for project area to include breaklines
- Checkpoint analyses to assess the accuracy of TIN data including Root Mean Square Error (RMSE) calculations to support vertical accuracy.
- Identification of remote sensing data voids and methods used to supplement data voids.
- NGS data sheets for Network Control Points (NCP) used to control remote sensing and ground surveys.
- NSP Format Topographic Database or Data Delivery consistent with the NSP Data Capture Standards – Appendix N of the Guidelines and Specifications for Flood Mapping Partners

Appendix N may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/fhm/dl_cgs.shtm.

Activity 5 - Independent QA/QC Review of Topographic Data

Responsible Mapping Partner: Pearl River County and/or its contractor, CDM, independent contractor, and FEMA.

Scope: CDM shall review the mapping data generated by Pearl River County under Activity 4 to ensure that these data are consistent with FEMA standards and standard engineering practice and are sufficient to prepare the DFIRM.

Standards: All work under Activity 5 shall be performed in accordance with the standards specified in Section 5 of this MAS. If Pearl River County utilizes a contractor to perform the QA/QC, the contractor shall not be the same one who performed the original analysis. FEMA may audit or assist in these activities if deemed necessary by the Regional Project Officer.

Deliverables: In accordance with the TSDN format described in described in Appendix M of Guidelines and Specifications for Flood Hazard Mapping Partners, CDM shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Activity:

- A Summary Report that describes the findings of the independent QA/QC review; and
- Recommendations to resolve any problems that are identified during the independent QA/QC review.

Activity 6 – Hydrologic Analyses

Responsible Mapping Partner: Pearl River County's contractor, CDM

Scope: CDM shall perform hydrologic analyses for approximately 800 square miles of drainage area for the flooding source(s) listed earlier in this MAS. CDM shall calculate peak flood discharges for the 10-, 2-, 1-, and 0.2-percent-annual-chance storm events using the HEC-HMS computer program. These flood discharges will be the basis for subsequent hydraulic analyses under Activity 8. In addition, CDM shall

address all concerns or questions regarding Activity 4 that are raised during the internal independent QA/QC review performed by CDM during the QA/QC review under Activity 7.

Since Geographic Information System (GIS)-based modeling will be used, CDM shall document automated data processing and modeling algorithms and provide them to FEMA to ensure they are consistent with the standards outlined above. Digital datasets (such as elevation, basin, or land use data) are to be documented and provided to FEMA for approval before performing the hydrologic analyses to ensure the datasets meet minimum requirements. If non-commercial (i.e., custom-developed) software is used for the analysis, then CDM shall provide full user documentation, technical algorithm documentation, and the software to FEMA for review before performing the hydrologic analyses.

USGS Regression Equations will be used rather than HEC-HMS where appropriate as determined in Activity 1.

Standards: All work under Activity 6 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: Upon completion of hydrologic modeling, CDM shall submit the results to an independent contractor for an independent QA/QC review under Activity 7. CDM shall submit the results of the hydrologic analyses for the remaining flooding sources for a final QA/QC review at the completion of this activity.

In accordance with the TSDN format described in described in Appendix M of Guidelines and Specifications for Flood Hazard Mapping Partners, CDM shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Activity:

- Digital copies of all hydrologic modeling (input and output) files for the 10-, 2-, 1-, and 0.2-percent-annual-chance storm events;
- Digital and hardcopy versions of the Summary of Discharges Table presenting discharge data for the flooding sources for which hydrologic analyses were performed;
- Digital and hardcopy versions of draft text for Section 3.1, Hydrologic Analyses, of the FIS report; and
- Digital and hardcopy versions of all backup data used in the analysis, including work maps.
- NSP Format Hydrology Database or Data Delivery consistent with the NSP Data Capture Standards – Appendix N of the Guidelines and Specifications for Flood Mapping Partners

For GIS-based modeling, deliverables shall include all input and output data, intermediate data processing products, and GIS data layers.

Activity 7 - Independent QA/QC Review of Hydrologic Analyses

Responsible Mapping Partner: Pearl River County and/or its contractor, CDM, independent contractor, and FEMA.

Scope: The independent reviewer shall review the technical, scientific, and other information submitted by CDM under Activity 6 to ensure that the data and modeling are consistent with FEMA standards and standard engineering practice and are sufficient to prepare the DFIRM. If Pearl River utilizes a contactor to perform the QA/QC, the contractor shall not be the same one who performed the original analysis. FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer. This work shall include, at a minimum, the activities listed below.

Review the submittal for technical and regulatory adequacy, completeness of required information, and supporting data and documentation. The technical review is to focus on the following:

- Use of acceptable models;
- Use of appropriate methodology(ies);
- Correctly applied methodology(ies)/model(s), including QC of input parameters;
- Comparison with gage data and/or regression equations, if appropriate; and
- Comparison with discharges for contiguous reaches or flooding sources.
- Maintain records of all contacts, reviews, recommendations, and actions and make them readily available to FEMA.
- Maintain an archive of all data submitted for hydrologic modeling review. (All supporting data must be retained for 3 years from the date funding recipient submits its final expenditure report to FEMA.)

Standards: All work under Activity 7 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in described in Appendix M of Guidelines and Specifications for Flood Hazard Mapping Partners, CDM shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Activity:

- A Summary Report that describes the findings of the independent QA/QC review and
- Recommendations to resolve any problems that are identified during the independent QA/QC review.

Activity 8 – Hydraulic Analyses

Responsible Mapping Partner: Pearl River County's contractor, CDM

Scope: CDM shall perform hydraulic analyses flooding sources determined from the project scoping in Activity 1. The modeling will include the 10-, 2-, 1-, and 0.2-percent-annual-chance events based on peak discharges computed under Activity 6. The hydraulic methods used for this analysis will be steady flow backwater analysis using HEC-RAS.

CDM shall use the cross-section and field data collected under Activity 3 to perform the hydraulic analyses. The hydraulic analyses will be used to establish flood elevations and regulatory floodways for the subject flooding sources.

CDM shall use the FEMA CHECK-RAS checking program to check the reasonableness of the hydraulic analyses. To facilitate the independent QA/QC review under Activity 9, the CDM shall provide explanations for unresolved messages from the CHECK-RAS program, as appropriate. In addition, CDM shall address all concerns or questions regarding Activity 6 that are raised by the independent CDM reviewer during the independent QA/QC review under Activity 9.

CDM shall document automated data processing and modeling algorithms for GIS-based modeling and provide them to FEMA for review to ensure they are consistent with the standards outlined above. Digital datasets are to be documented and provided to FEMA for approval before performing the hydraulic analyses to ensure the datasets meet minimum requirements.

Standards: All work under Activity 8 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: Upon completion of hydraulic modeling for Hobolochitto Creek, the CDM shall submit the results to CDM independent reviewer for an independent QA/QC review under Activity 9. CDM shall submit the results of the hydraulic analyses for the remaining flooding sources for a final QA/QC review at the completion of this activity.

In accordance with the TSDN format described in described in Appendix M of Guidelines and Specifications for Flood Hazard Mapping Partners, CDM shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Activity:

- Digital profiles of the 10-, 2-, 1- and 0.2-percent-annual-chance water-surface elevations representing existing conditions using the FEMA RASPLOT program or similar software;
- Digital and hardcopy versions of the Floodway Data Table for each flooding source that is compatible with the DFIRM database;
- Digital and hardcopy versions of all hydraulic modeling (input and output) files;
- Digital and hardcopy versions of table with range of Manning's "n" values;
- Explanations for unresolved messages from the CHECK-RAS program, as appropriate;
- Digital and hardcopy versions of all backup data used in the analyses;
- Digital and hardcopy versions of draft text for inclusion in the FIS report.
- For GIS-based modeling, deliverables include all input and output data, intermediate data processing products, GIS data layers, and final products in the format of the DFIRM database structure.

NSP Format Hydraulic Database or Data Delivery consistent with the NSP Data Capture Standards – Appendix N of the Guidelines and Specifications for Flood Mapping Partners

Activity 9 - Independent QA/QC Review of Hydraulic Analyses

Responsible Mapping Partner: Pearl River County's contractor, CDM, or independent contractor, and FEMA.

Scope: The independent reviewer shall review the technical, scientific, and other information submitted by CDM under Activity 8 to ensure that the data and modeling are consistent with FEMA standards and standard engineering practice and are sufficient to revise the FIRM. If Pearl River utilizes a contactor to perform the QA/QC, the contractor shall not be the same one who performed the original analysis. FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer. This work shall include, at a minimum, the activities listed below.

- Review the submittal for technical and regulatory adequacy, completeness of required information, and supporting data and documentation. The technical review is to focus on the following:
  - Use of acceptable model(s);
  - Starting water-surface elevations;
  - Cross-section geometry;
  - Manning's "n" values and expansion/contraction coefficients;
  - Bridge and culvert modeling;
  - Flood discharges;
  - Regulatory floodway computation methods; and
  - Tie-in to upstream and downstream non-revised Flood Profiles.
- Use the CHECK-RAS program as appropriate to flag potential problems and focus review efforts.

- Maintain records of all contacts, reviews, recommendations, and actions and make them readily available to FEMA.
- Maintain an archive of all data submitted for hydraulic modeling review. (All supporting data must be retained for 3 years from the date funding recipient submits its final expenditure report to FEMA.)

Standards: All work under Activity 9 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in described in Appendix M of Guidelines and Specifications for Flood Hazard Mapping Partners, CDM shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Activity:

- A Summary Report that describes the findings of the independent QA/QC review; and
- Recommendations to resolve any problems that are identified during the independent QA/QC review.

Activity 10 - Floodplain Mapping (Detailed Riverine)

Responsible Mapping Partner: Pearl River County's contractor, CDM.

Scope: CDM shall delineate the 1- and 0.2-percent-annual-chance floodplain boundaries and the regulatory floodway boundaries (if required) for the flooding sources for which detailed hydrologic, and/or hydraulic were performed. CDM shall incorporate all new or revised hydrologic, and/or hydraulic, modeling and shall use the topographic data acquired under Activity 4 to delineate the floodplain and regulatory floodway boundaries on a digital work map. In addition, CDM shall incorporate the results of all effective Letters of Map Change (LOMCs) within the revised areas as appropriate. Also, CDM shall address all concerns or questions regarding Activity 10 that are raised by CDM during the independent QA/QC review under Activity 11.

Standards: All work under Activity 10 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: Upon completion of floodplain mapping, CDM shall submit the results to an independent reviewer for an independent QA/QC review under Activity 11. The mapping for the remaining flooding sources is to be submitted for a final QA/QC review at the completion of this activity.

In accordance with the TSDN format described in described in Appendix M of Guidelines and Specifications for Flood Hazard Mapping Partners, CDM shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Activity:

- Digital work maps showing the 1- and 0.2-percent-annual-chance floodplain boundary delineations, regulatory floodway boundary delineations, cross sections, BFEs, flood insurance risk zone labels, and all applicable base map features;
- DFIRM mapping files, prepared in accordance with the requirements in Guidelines and Specifications for Flood Hazard Mapping Partners;
- Metadata files describing the DFIRM data, including all required information shown in Guidelines and Specifications for Flood Hazard Mapping Partners;
- Complete set of plots of DFIRM panels showing all detailed flood hazard information at a suitable scale;
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM;

- Any backup or supplemental information used in the mapping required for the independent QA/QC review outlined under Activity 9; and
- An explanation for the use of existing topography for the studied reaches, if appropriate.

NSP Format Mapping Database or Data Delivery consistent with the NSP Data Capture Standards – Draft Appendix N of the Guidelines and Specifications for Flood Mapping Partners

Task 10A – Floodplain Mapping (Re-delineating Using Effective Flood Profiles and Updated Topographic Data)

Responsible Entity: Pearl River County's contractor, CDM.

Scope: Digital floodplain boundaries shall be delineated for the flooding sources listed in the contract task order. The mapping shall incorporate newly acquired topographic information. The floodplain boundaries for the 1- and .02-percent-annual-chance floods shall be delineated on a digital work map based on topographic data developed under Task 40 of this scope of work. In addition, the Contractor shall address all concerns or questions regarding this task raised during the independent QA/QC review.

Standards: All work conducted under this task shall conform to the standards specified for this task in Section 5, "Applicable Standards" of this SOW. In the event of any contradictions between the SOW and the standards, the standards shall control.

Deliverables: Upon completion of floodplain mapping for flooding sources, the results shall be submitted to the FEMA Regional Project Officer for independent QA/QC review in accordance with the delivery dates specified in task orders.

- In accordance with the TSDN format referenced in Task 54 of this SOW, the Contractor shall make the following products available to the FEMA Regional Project Officer:
- Digital work maps with the 1- and 0.2-percent-annual chance floodplain boundaries and floodway boundaries (if delineated on the effective FIRM or FBFM) delineated. These maps should also include cross sections, BFE's, and flood insurance risk zone designation labels as shown on the FIRM and FBFM.
- NSP Format Mapping Database or Data Delivery consistent with the NSP Data Capture Standards – Appendix N of the Guidelines and Specifications for Flood Mapping Partners
- Any backup or supplemental information used in the mapping required for the independent QA/QC review is to be included.

Activity 10B - Floodplain Mapping (Refinement or Creation of Zone A)

Responsible Mapping Partner: Pearl River County's contractor, CDM.

Scope: CDM shall delineate the 1-percent-annual-chance floodplain boundaries for the flooding sources identified during the Scoping Process in Activity 1. CDM shall use existing topographic data or the topographic data acquired under Activity 4 to delineate the floodplain boundaries on a digital work map. In addition, CDM shall address all concerns or questions regarding Activity 10B that are raised by the CDM independent reviewer during the independent QA/QC review under Activity 11.

CDM may expand on the approaches for analyzing Zone A areas outlined in Guidelines and Specifications for Flood Hazard Mapping Partners and in FEMA 265, Managing Floodplain Development in Approximate Zone A Areas (April 1995), and/or develop new approaches. Such approaches must be

coordinated with the FEMA Regional Project Officer identified in Section 12 of this MAS before analysis and mapping begin.

Standards: All work under Activity 10B shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: Upon completion of floodplain mapping for the Pearl River, CDM shall submit the results to the CDM independent reviewer for an independent QA/QC review under Activity 11. CDM shall submit the mapping for the remaining flooding sources for a final QA/QC review at the completion of this activity.

In accordance with the TSDN format described in described in Appendix M of Guidelines and Specifications for Flood Hazard Mapping Partners, CDM shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Activity:

- Digital work maps showing the 1-percent-annual-chance floodplain boundary delineations, flood insurance risk zone labels, and all applicable base map features;
- Written summary of the analysis methodologies;
- Any backup or supplemental information, including supporting calculations and assumptions for any computed 1-percent-annual-chance water-surface elevations used in the mapping required for the independent QA/QC review under Activity 11;
- Hardcopy and digital versions of input and output for any computer programs that were used;
- DFIRM mapping files, prepared in accordance with the requirements in Guidelines and Specifications for Flood Hazard Mapping Partners;
- Metadata files describing the DFIRM data, including all required information shown in Guidelines and Specifications for Flood Hazard Mapping Partners;
- Complete set of plots of DFIRM panels showing all detailed flood hazard information at a suitable scale; and
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM.
- NSP Format Mapping Database or Data Delivery consistent with the NSP Data Capture Standards – Appendix N of the Guidelines and Specifications for Flood Mapping Partners

If automated GIS-based models are applied, all input data, output data, intermediate data processing products, and GIS data layers shall be submitted.

Activity 11 - Independent QA/QC Review of Floodplain Mapping (Revised Areas)

Responsible Mapping Partner: Pearl River County's contractor, CDM, independent contractor, and FEMA.

Scope: The independent reviewer shall review the floodplain mapping submitted by CDM under Activities 10 and 10B to ensure that the results of the analyses performed are accurately represented. If Pearl River utilizes a contactor to perform the QA/QC, the contractor shall not be the same one who performed the original analysis. FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer. This work shall include, at a minimum, the activities listed below.

- Review the cross sections for proper location and orientation on the work map and agreement with the Floodway Data Table.

- Review the BFEs shown on the work map for proper location and agreement with the results of the hydraulic modeling.
- Review the regulatory floodway widths for agreement with the widths shown in the Floodway Data Table and the results of the hydraulic modeling.
- Review the floodplain boundaries for agreement with the flood elevations shown in the Floodway Data Table and the contour lines and other topographic information shown on the work maps.
- Review the floodplain widths at cross sections as shown on the work maps to ensure they match the Floodway Data Table.
- Review the floodplain boundaries as shown on the work maps to ensure they match the Flood Profiles.
- Review the flood insurance risk zones as shown on the work maps to ensure they are labeled properly.
- Review the DFIRM mapping files to ensure they were prepared in accordance with the requirements in Guidelines and Specifications for Flood Hazard Mapping Partners.
- Review the metadata files to ensure they include all required information shown in Guidelines and Specifications for Flood Hazard Mapping Partners.

Standards: All work under Activity 11 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in described in Appendix M of Guidelines and Specifications for Flood Hazard Mapping Partners, CDM shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Activity:

- A Summary Report that describes the findings of the QA/QC review, noting any deficiencies in or agreeing with the mapping results;
- Recommendations to resolve any problems that are identified during the independent QA/QC review; and
- An annotated work map with all questions and/or concerns indicated, if necessary.

Activity 12 - Base Map Acquisition

Responsible Mapping Partner: Pearl River County's contractor, CDM

Scope: Activity 12 consists of obtaining the digital base map, Pearl River County, for the project. CDM shall provide the digital base map. The required activities are as follows:

- Obtain digital files (raster or vector) of the base map.
- Secure necessary permissions from the map source to allow FEMA's use and distribution of hardcopy and digital map products using the digital base map, free of charge.
- Certify that the digital data meets the minimum standards and specifications that FEMA requires for DFIRM production.
- Populate the DFIRM database with the information required by FEMA.

Standards: All work under Activity 12 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in described in Appendix M of Guidelines and Specifications for Flood Hazard Mapping Partners, CDM shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Activity:

- Written certification that the digital data meet the minimum standards and specifications and
- Documentation that FEMA can use the digital base map.

Appendix M may be downloaded from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf.

Task 13 – Digital Flood Insurance Rate Map Production (Non-Revised Areas)

Responsible Entity: Pearl River County's contractor, CDM

Scope: For all flooding sources (except those specified in the contract task order that shall have updated flood data developed under Tasks 39 – 48), the effective FIRM's and Flood Boundary Floodway Maps (FBFM's) shall be converted to digital format that conforms to FEMA DFIRM specifications. The base map acquired under Task 49 shall be used for the conversion. The scope of this task covers the digitization of FIRM panels and FBFM panels (number of panels shall be identified in contract task orders). Letters of Map Change (LOMC's) issued since the current effective FIRM for each affected community shall also be incorporated. The digital flood theme for the flooding sources specified in the contract task order shall not be digitized as part of this task; rather, the Contractor shall leave these as "holes" in the digital flood theme that shall be filled in as part of Task 51 using digital flood data from Task 47.

Standards: All work under Activity 13 shall be performed in accordance with the standards specified in Section 5 of this MAS. In the event of any contradictions between the MAS and the standards, the standards shall control.

Deliverables: In accordance with the TSDN format described in described in Appendix M of Guidelines and Specifications for Flood Hazard Mapping Partners, CDM shall submit the following products available to the FEMA Regional Project Officer in accordance with the delivery dates specified in task orders:

- DFIRM mapping files in one of the GIS file formats specified in FEMA's DFIRM Specifications. These files shall be provided on CD-ROM.
- DFIRM database files in one of the database formats specified in FEMA's DFIRM Specifications. These files shall be provided on CD-ROM.
- Metadata files describing the DFIRM data should be provided. These files shall include the required information and follow the examples shown in FEMA's Digital Flood Insurance Rate Map Specifications.
- A complete set of plots of the DFIRM panels showing all detail at the scale(s) agreed upon in the task order shall be provided.
- A Quality Assurance/Quality Control (QA/QC) report that includes a description and the results of all automated or manual quality assurance steps taken during the preparation of the DFIRM's shall be provided.

Task 13A – Independent Quality Assurance/Quality Control Review of Digital Flood Insurance Rate Map Production (Non-Revised Areas)

Responsible Entity: Pearl River County's contractor, CDM, independent contractor, and FEMA.

Scope: An independent contractor shall provide independent review for the DFIRM panels submitted by other contractors to ensure that the new DFIRM panels accurately represent the information shown on the effective FIRM's or FBFM's for the area mapped. If Pearl River utilizes a contactor to perform the QA/QC, the contractor shall not be the same one who performed the original analysis. FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer. This work shall include, at a minimum, the activities listed below. This work shall include, at a minimum, checking the following:

- Cross sections are properly located and oriented as shown on the FIRM or FBFM.
- The BFE's are properly located and agree with the BFE's shown on the FIRM.
- The floodway widths agree with the widths shown on the FIRM or FBFM.
- The floodplain boundaries agree with the floodplain boundaries shown on the FIRM and the contour lines, other topographic information, and planimetric information shown on the DFIRM base.
- Zone designations are indicated properly.

Standards: All work under Activity 13A shall be performed in accordance with the standards specified in Section 5 of this MAS. In the event of any contradictions between the MAS and the standards, the standards shall control.

Deliverables: In accordance with the TSDN format described in described in Appendix M of Guidelines and Specifications for Flood Hazard Mapping Partners the Contractor shall submit the following products to the FEMA Regional Project Officer in accordance with the delivery dates specified in task orders:

- A Summary Report that describes the findings of the QA/QC review noting any deficiencies and providing recommendations to resolve them or agreeing with the mapping results;
- Recommendations to resolve any problems that arise as a result of the QA/QC review; and
- An annotated copy of the DFIRM with all questions and/or concerns indicated, if necessary.

Activity 14 –DFIRM Production (Merging Revised and Non-Revised Information)

Responsible Mapping Partner: Pearl River County's contractor, CDM

Scope: Upon completion of the floodplain mapping activities for the revised areas (Activities 10, 10A and 10B) CDM shall merge the digital floodplain data into a single, updated DFIRM. This work is to include tie-in of flood hazard information for areas that were not studied as part of the Flood Map Project documented in the project scoping in Activity 1. CDM also shall tie in the revised and non-revised Flood Profiles, floodplain boundaries, and regulatory floodway boundaries with contiguous communities that were not studied as part of the Flood Map Project documented in the project scoping in Activity 1. CDM shall coordinate with FEMA and those Mapping Partners responsible for Activities 10, 10A, 10B, and 13, 13A as necessary, to resolve any potential tie-in issues.

Standards: All work under Activity 14 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in described in Appendix M of Guidelines and Specifications for Flood Hazard Mapping Partners, CDM shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Activity:

- Digital work maps showing the 1- and 0.2-percent-annual-chance floodplain boundary delineations, regulatory floodway boundary delineations, cross sections, BFEs, flood insurance risk zone labels, and all applicable base map features;

- DFIRM mapping files, prepared in accordance with the requirements in Guidelines and Specifications for Flood Hazard Mapping Partners;
- Metadata files describing the DFIRM data, including all required information shown in Guidelines and Specifications for Flood Hazard Mapping Partners;
- Complete set of plots of DFIRM panels showing all detailed flood hazard information at a suitable scale; and
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM.
- NSP Format DFIRM Database or Data Delivery consistent with the NSP Data Capture Standards – Appendix N of the Guidelines and Specifications for Flood Mapping Partners

Activity 14A – DFIRM Production (Application of DFIRM Graphics and Database Specifications)

Responsible Mapping Partner: Pearl River County's contractor, CDM, independent contractor, and FEMA.

Scope: CDM shall apply the final FEMA DFIRM graphic and database specifications to the DFIRM files produced under Activity 14. This work shall include adding all required annotation, line pattern, area shading, and map collar information (e.g., map borders, title blocks, legends, notes to user). CDM shall coordinate with those Mapping Partners responsible for Activities 10, 10A, 10B, 13, and 14, as necessary, to resolve any problems that are identified during Activity 14A.

Standards: All work under Activity 14A shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in described in Appendix M of Guidelines and Specifications for Flood Hazard Mapping Partners, CDM shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Activity:

- Digital work maps showing the 1- and 0.2-percent-annual-chance floodplain boundary delineations, regulatory floodway boundary delineations, cross sections, BFEs, flood insurance risk zone labels, and all applicable base map features;
- DFIRM mapping files, prepared in accordance with the requirements in Guidelines and Specifications for Flood Hazard Mapping Partners;
- Metadata files describing the DFIRM data, including all required information shown in Guidelines and Specifications for Flood Hazard Mapping Partners;
- Complete set of plots of DFIRM panels showing all detailed flood hazard information at a suitable scale; and
- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM.
- NSP Format Mapping Database or Data Delivery consistent with the NSP Data Capture Standards – Appendix N of the Guidelines and Specifications for Flood Mapping Partners

Activity 14B – Independent QA/QC Review of DFIRM Product Meeting FEMA Graphics and Database Specifications

Responsible Mapping Partner: Pearl River County and/or its contractor, CDM, independent contractor, and FEMA.

Scope: Upon completion of the floodplain mapping activities (Activities 10, 10A, and/or 10B) and DFIRM production activities (Activities 13, 14, and 14A), an independent contractor shall review the DFIRM to ensure it meets current FEMA graphic specifications. In addition, the contractor shall review the DFIRM spatial database to determine if it meets current FEMA database specifications. CDM shall coordinate with other Mapping Partners, as necessary, to resolve any problems identified during this QA/QC review. If Pearl River utilizes a contactor to perform the QA/QC, the contractor shall not be the same one who performed the original analysis. FEMA may audit or assist in these activities if deemed to be necessary by the Regional Project Officer. This work shall ensure that the requirements below are met.

- All required DFIRM features are accurately and legibly labeled and follow the examples shown in the FEMA DFIRM specifications. This includes all flood insurance risk zones, BFEs, cross sections, studied streams, mapped political entities, and all roads within and adjacent to the 1-percent-annual-chance floodplains.
- All DFIRM features are correctly symbolized with the appropriate symbol, line pattern, or area shading and follow the requirements in Guidelines and Specifications for Flood Hazard Mapping Partners.
- All map collar information is complete, correct, and follows the requirements specified in Guidelines and Specifications for Flood Hazard Mapping Partners.
- DFIRM mapping files are in one of the GIS file and database formats specified in FEMA's Guidelines and Specifications for Flood Hazard Mapping Partners and conform to those specifications for content and attribution.
- DFIRM database files are in one of the database formats specified in FEMA's Guidelines and Specifications for Flood Hazard Mapping Partners and conform to those specifications for content and attribution.
- Metadata files describing the DFIRM data include all required information shown in Guidelines and Specifications for Flood Hazard Mapping Partners.
- The FIS report is prepared in the FEMA Countywide Format as documented in Appendix J of Guidelines and Specifications for Flood Hazard Mapping Partners.

Standards: All work under Activity 14B shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in described in Appendix M of Guidelines and Specifications for Flood Hazard Mapping Partners, CDM shall make the following products available to FEMA in accordance with the schedule outlined in Section 6 for this Activity:

- A Summary Report that describes the findings of the QA/QC review noting any deficiencies in or agreeing with the mapping results and the results of all automated or manual QA/QC steps taken during the independent QA/QC review;
- Recommendations to resolve any problems that are identified during the independent QA/QC review; and
- An annotated copy of the DFIRM with all questions and/or concerns indicated, if necessary.

Activity 15 - Preliminary DFIRM and FIS Report Distribution

Responsible Mapping Partners: Pearl River County's contractor, CDM and FEMA.

Scope: Activity 15 consists of the final preparation, review, and distribution of the Preliminary copies of the DFIRM and FIS report for community official and general public review and comment. FEMA may

audit or assist in these activities if deemed to be necessary by the Regional Project Officer. The activities to be performed are summarized below.

- *Preliminary Transmittal Letter Preparation.* The Pearl River County shall prepare letters to transmit the Preliminary copies of the DFIRM and FIS report and related enclosures to all affected communities, all other Project Team members, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA.
- *Final QA/QC Review of Preliminary DFIRM and FIS Report:* The CDM shall perform a final QA/QC review of the Preliminary DFIRM and FIS report, including all data tables, Flood Profiles, and other components of the FIS report. The QA/QC review procedures shall be consistent with the Guidelines and Specifications for Flood Hazard Mapping Partners.
- *Discrepancy Resolution:* The CDM shall work with Pearl River County and FEMA as appropriate to resolve discrepancies identified during the final QA/QC review.
- *Distribution of Preliminary DFIRM and FIS Report:* The Pearl River County shall distribute the Preliminary copies of the DFIRM and FIS report to all affected communities, all other Project Team members, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA.
- *News Release Preparation:* The CDM shall prepare news release notifications of BFE changes for all affected communities if appropriate and perform QA/QC reviews of the notices for accuracy and compliance with FEMA format requirements. The CDM shall file the notifications for later submittal to FEMA for review.
- *Preliminary Summary of Map Actions (SOMA) Preparation:* The CDM shall prepare Preliminary SOMAs for all affected communities if appropriate. The SOMA shall list pertinent information regarding LOMCs that will be affected by the issuance of the DFIRM (i.e., superseded, incorporated, revalidated).

Standards: All work under Activity 15 shall be performed in accordance with the standards specified in Section 5 of this MAS.

Deliverables: In accordance with the TSDN format described in described in Appendix M of Guidelines and Specifications for Flood Hazard Mapping Partners and the requirements documented in Section 1 and Appendix A of the FEMA Document Control Procedures Manual. The MCC CDM shall make the products listed below available to FEMA in accordance with the schedule outlined in Section 6 for this Activity.

- Preliminary transmittal letters shall be prepared. These letters and any additional letters requested by FEMA shall be prepared in accordance with the current version of the FEMA Document Control Procedures Manual.
- Preliminary copies of the DFIRM and FIS report, including all updated data tables and Flood Profiles shall be mailed to the Chief Executive Officer (CEO) and floodplain administrator of each affected community, all other Project Team members, the State NFIP Coordinator, the FEMA Regional Office, and others as directed by FEMA.
- Preliminary SOMAs, prepared in accordance with FEMA requirements, shall be provided as appropriate.
- Revised DFIRM mapping files, prepared in accordance with the requirements in Guidelines and Specifications for Flood Hazard Mapping Partners, shall be provided on CD-ROM.
- Revised DFIRM database files, prepared in accordance with the requirements in Guidelines and Specifications for Flood Hazard Mapping Partners, shall be provided on CD-ROM.
- Revised metadata files describing the DFIRM data, including all required information shown in Guidelines and Specifications for Flood Hazard Mapping Partners, shall be provided on CD-ROM.

- A Summary Report that describes and provides the results of all automated or manual QA/QC review steps taken during the preparation of the DFIRM shall be provided.

Activity 16 - Post-Preliminary Processing

Responsible Entity: Pearl River County's contractor, CDM, and FEMA.

Scope: This task consists of monitoring the status of the FIRM and FIS report after the preliminary reports have been issued for public review and comment. The activities to be performed include:

- Pearl River County and its contractor, CDM shall verify that a proposed BFE determination letter is sent to the community CEO(s) and floodplain administrator(s) for all affected communities, that a news release is published in prominent newspapers with local circulation within each affected community in accordance with 44 CFR, and that a notice is published in the Federal Register in accordance with the current version of the FEMA Guidelines and Specifications for Flood Hazard Mapping Partners, as amended, and Document Control Procedures Manual.
- Appeals and Protests: Pearl River County and its contractor, CDM, shall support FEMA in reviewing appeals and protests received during the 90-day appeal period. For each appeal and protest, activities could include technical review of the appeal/protest, preparation of letters requesting additional supporting data, performing revised analyses, and preparing a proposed resolution for FEMA's review.
- Special Correspondence: Pearl River County and its contractor, CDM, shall support FEMA in responding to comments not received within the 90-day appeal period (referred to as "special correspondence"), including drafting responses for FEMA review.
- Revise FIRM's and FIS Report: If necessary, Pearl River County and its contractor, CDM, shall revise the DFIRM(s) and FIS report(s) at the direction of the FEMA Regional Project Officer and distribute Revised Preliminary copies of the DFIRM(s) and FIS reports, including data tables and flood profiles.
- Final Map Processing: Pearl River County and its contractor, CDM, may prepare final reproduction materials for the DFIRM(s) and FIS report(s) and provide these materials to FEMA. These materials shall include camera-ready film negatives of the DFIRM(s) and digital and paper copies of the FIS report(s) and profiles.
- Archiving Data: Pearl River County and its contractor, CDM, shall ensure the engineering backup data and related correspondence are provided to the Engineering Study Data Package Facility.

Standards: All work conducted under this task shall conform to the standards specified for this task in Section 5, "Applicable Standards" section of this SOW. In the event of any contradictions between the SOW and the standards, the standards shall control.

Deliverables: In accordance with the requirements provided in the current version of the FEMA Guidelines and Specifications for Flood Hazard Mapping Partners, as amended and Document Control Procedures Manual, the Contractor shall submit the following products to the FEMA Regional Project Officer in accordance with the delivery dates specified in task orders:

- Documentation that the news release(s) was published in accordance with FEMA requirements;
- Documentation that the appropriate Federal Register notices were published in accordance with FEMA requirements;
- Draft Special Correspondence and backup data and information for FEMA review.
- Appeal and Protest resolution letters, and all backup data and information for FEMA review.

- Sets (number to be specified in contract task order) of DFIRM negatives and printed FIS reports, including all updated data tables and Flood Profiles.
- Complete, organized Engineering Study Data Packages.

SECTION 2—Technical and Administrative Support Data Submittal

The Project Team members for this Flood Map Project that have responsibilities for activities included in this MAS shall comply with the data submittal requirements summarized below.

All supporting documentation for the activities in this Mapping Activity Statement shall be submitted in the TSDN format in accordance with Appendix M of the FEMA Guidelines and Specifications for Flood Hazard Mapping Partners, dated April 2003. Appendix M is available for viewing or download on the FEMA Web site at http://www.fema.gov/pdf/fhm/frm_gsam.pdf. Table 2-1 indicates the sections of the TSDN that apply to each mapping activity.

If any issues arise that could affect the completion of an activity within the proposed scope or budget, the responsible Mapping Partner shall complete a Special Problem Report (SPR) as soon as possible after the issue is identified and submitted to FEMA. The SPR is to describe the issue and propose possible resolutions. (For additional information on SPRs, refer to Appendix M, Subsection M.2.1.1 of Guidelines and Specifications for Flood Hazard Mapping Partners.) Table 2-1. Mapping Activities and Applicable TSDN Sections

TSDN Section	Mapping Activities													
	1	2	3	4	6	7	8	9	10 and 10B	11	13 and 13A	14, 14A, and 14B	15	16
General Documentation														
Special Problem Reports	X	X	X	X	X	X	X	X	X	X		X	X	X
Telephone Conversation Reports	X	X	X	X	X	X	X	X	X	X		X	X	X
Meeting Minutes/Reports	X	X	X	X	X	X	X	X	X	X		X	X	X
General Correspondence	X	X	X	X	X	X	X	X	X	X		X	X	X
Engineering Analyses														
Hydrologic Analyses			X	X	X	X	X	X	X	X				

Hydraulic Analyses			X	X	X	X	X	X	X	X				
Key to Cross-Section Labeling			X	X	X	X	X	X	X	X				
Key to Transect Labeling			X	X	X	X	X	X	X	X				
Draft FIS Report					X	X	X	X						
Mapping Information	X	X							X	X		X	X	X
Miscellaneous Reference Information	X	X	X	X	X	X	X	X	X	X		X	X	X

SECTION 3—PERIOD OF PERFORMANCE

The mapping activities outlined in this MAS will begin on July 1, 2004, and will be completed no later than April 30, 2006. The mapping activities may be terminated at the option of FEMA or Pearl River County in accordance with the provisions of the Partnership Agreement dated September 21, 2000. If these Mapping Activities are terminated; the remaining funds from uncompleted activities, provided by FEMA for this Mapping Activity Statement, will be returned to FEMA.

SECTION 4—Funding/LEVERAGE

FEMA is providing funding, in the amount of $ to Pearl River County for the completion of this Flood Map Project. Pearl River County shall provide any additional in-kind resources required to complete the assigned activities for this Flood Map Project. During the scoping process, additional needs may be identified. Activities associated with any additional needs would be performed based on availability of additional funds. The CTP Leverage listed below includes in-kind services and blue book values for acquired information (i.e. base map data, hydrologic and hydraulic analyses, etc.). More detailed leverage information will be determined during the detailed scoping process and reported back to FEMA at that time.

Additional work needed to complete project		% of Project	Managed by	FEMA Contribution	Existing CTP Contribution	% Leverage	Total Project Cost
Phase 1	Scoping	2.7%	PRC	$	$0	0%	$

Phase 2	Education and Outreach	2.7%	PRC	$	$0	0%	$
Phase 3	Data Collection / Engineering Study	62.9%	PRC	$	$ (paid)	100%	$
Phase 4	Engineering Review / Map Production	31.7%	PRC	$	$0	0%	$
			TOTALS	$	$	29%	$

FEMA funds identified above are available to be used for the following activities:

Activities	FUNDABLE?
Activity 1 – Scoping	Yes, up to 10% of total cost
Activity 2 - Outreach	Yes, up to 10% of total cost
Activity 3 – Field Surveys and Reconnaissance	Yes
Activity 4 – Topographic Data Development	No, unless approval given during scoping phase by Regional PO
Activity 5 – Independent QA/QC Review of Topographic Data	No
Activity 6 –Hydrologic Analyses	Yes
Activity 6A –Coastal Flood Hazard Analyses	Yes
Activity 7–Independent QA/QC Review of Hydrologic Analyses	Yes
Activity 7A–Independent QA/QC Review of Coastal Hazard Analyses	Yes
Activity 8 – Hydraulic Analyses	Yes
Activity 9 – Independent QA/QC Review of Hydraulic Analyses	Yes
Activity 10 – Floodplain Mapping (Detailed Riverine or Coastal Analysis)	Yes
Activity 10A – Floodplain Mapping (Redelineation Using Effective Flood Profiles and Updated Topographic Data)	Yes
Activity 10B – Floodplain Mapping (Refinement or Creation of Zone A)	Yes

Activities	FUNDABLE?
Activity 11 – Independent QA/QC Review of Floodplain Mapping (Revised Areas)	Yes
Activity 12 – Base Map Acquisition	No
Activity 13 – DFIRM Production (Non-Revised Areas)	Yes
Activity 13A – Independent QA/QC Review of DFIRM Production (Non-Revised Areas)	Yes
Activity 14 – DFIRM Production (Merge Revised and Non-Revised Information)	Yes
Activity 14A – Application of DFIRM Graphic and Database Specifications	Yes
Activity 14A – Independent QA/QC Review of DFIRM Product Meeting FEMA Graphic and Database Specifications	Yes
Activity 15 – Preliminary DFIRM and FIS Report Distribution	Yes
Activity 16 – Post-Preliminary Processing	Yes

SECTION 5—STANDARDS

The standards relevant to this Mapping Activity Statement are provided in Tables 5-1 and 5-2. Information on the correct volume, appendix, section, or subsection of the FEMA Guidelines and Specifications for Flood Hazard Mapping Partners to be referenced for each mapping activity are summarized in Table 5-2.

These Guidelines are available for viewing or download from the FEMA Flood Hazard Mapping Web site at http://www.fema.gov/fhm/dl_cgs.shtm.

Table 5-1. Applicable Standards for Project Activities

Applicable Standards	1	2	3	4	6	7	8	9	10 and 10B	11	14, 14A and 14B	15	16
Guidelines and Specifications for Flood Hazard Mapping Partners, April 2003	X	X	X	X	X	X	X	X	X	X	X	X	X
American Congress on Surveying and Mapping Procedures	X		X	X									
Global Positioning System (GPS) Surveys: National Geodetic Survey (NGS-510), "Guidelines for Establishing GPS-Derived Ellipsoid Heights," November 1997	X		X	X									
Engineer Manual 1110-1-1000, Photogrammetric Mapping (USACE), July 1, 2002	X		X	X									
Engineer Manual 1110-2-1003, Hydrographic Surveys (USACE), January 1, 2002	X		X	X									
"Numerical Models Accepted by FEMA for NFIP Usage," Updated April 2003	X				X	X	X	X					
Content Standard for Digital Geospatial Metadata (Federal	X	X		X					X	X	X	X	X

Geographic Data Committee), 1998													
Document Control Procedures Manual, December 2000	X	X		X								X	X
44 Code of Federal Regulations Part 66 and 67		X											

Table 5-2. Project Activities and Applicable Portions of FEMA Guidelines and Specifications

Activity Number	Activity Description	Applicable Volume, Section/Subsection, and Appendix
1	Scoping	Appendix I, Scoping Report document attached in Appendix A to this Mapping Activity Statement
2	Outreach	44 Code of Federal Regulations Part 66 and 67
3	Field Surveys and Reconnaissance	Volume 1, Section 1.4 (specifically Subsection 1.4.2.1) Appendix A, Sections A.4, A.5, A.6, A.7, and A.8 Appendix F, Section F.3 Appendices B, C, and M
4	Topographic Development	Volume 1, Section 1.4 (specifically Subsection 1.4.2.1) Appendix A, Sections A.4, A.5, A.6, A.7, and A.8 Appendix F, Section F.3 Appendices B, C, and M
6	Hydrologic Analyses	Appendix A, Sections A.4, A.5, A.6, A.7, and A.8 Appendix F, Section F.3 Appendices B, C, and M Appendices E, F, G, H, and M

Table 5-2. Project Activities and Applicable Portions of FEMA Guidelines and Specifications (Cont'd)

Activity Number	Activity Description	Applicable Volume, Section/Subsection, and Appendix
7	Independent QA/QC Review of Hydrologic Analyses	Volume 1, Section 1.4 (specifically Subsection 1.4.1) Appendix A, Section A.4 Appendix C, Section C.2 Appendices E, F, G, H, and M
8	Hydraulic Analyses	Volume 1, Section 1.4 (specifically Subsections 1.4.2.2 and 1.4.2.4) Appendix A, Section A.4 (specifically Subsection A.4.7) Appendix C, Sections C.3 and C.7 Appendices B, E, F, G, H, and M
9	Independent QA/QC Review of Hydraulic Analyses	Volume 1, Section 1.4 (specifically Subsection 1.4.1) Appendix A, Section A.4 (specifically Subsection A.4.7) Appendix C, Section C.5 Appendices B, E, F, G, H, and M
10	Floodplain Mapping (Detailed Riverine or Coastal Analysis)	Volume 1, Section 1.4 (specifically Subsection 1.4.2.3) Appendix C, Sections C. 4 and C.6

Activity Number	Activity Description	Applicable Volume, Section/Subsection, and Appendix
		Appendix D, Sections D.2 (specifically Subsection D.2.7) and D.3 (specifically Subsection D.3.7) Appendices E, F, G, H, K, L, and M
10B	Floodplain Mapping (Refinement or Creation of Zone A)	Volume 1, Section 1.4 (specifically Subsection 1.4.2.3) Appendix C, Sections C.4 and C.6 Appendices K, L, and M
11	Independent QA/QC Review of Floodplain Mapping (Revised Areas)	Volume 1, Section 1.4 (specifically Subsections 1.4.1 and 1.4.2.3) Appendix C, Sections C.4 and C.6 Appendix D, Sections D.2 (specifically Subsection D.2.7) and D.3 (specifically Subsection D.3.7) Appendices E, F, G, H, K, L, and M
14	DFIRM Production (Merging Revised and Non-Revised Areas)	Volume 1, Section 1.4 (specifically Subsections 1.4.2.3 and 1.4.3.3) Appendices K, L, and M
14A	DFIRM Production (Application of FEMA Graphics and Database Specifications)	Volume 1, Section 1.4 (specifically Subsections 1.4.2.3, 1.4.3.3, 1.4.3.9, and 1.4.3.10) Appendices K, L, and M
14B	Independent QA/QC Review of DFIRM Product Meeting FEMA Graphics and Database Specifications	Volume 1, Section 1.4 (specifically Subsections 1.4.2.3, 1.4.3.3, 1.4.3.9, and 1.4.3.10) Appendices K, L, and M

Activity Number	Activity Description	Applicable Volume, Section/Subsection, and Appendix
15	Preliminary DFIRM and FIS Report Distribution	Volume 1, Sections 1.4 (specifically Subsections 1.4.2 and 1.4.3) and 1.5 (specifically Subsection 1.5.1) Appendices J, K, L, and M
16	Post-Preliminary Processing	Volume 1, Section 1.5 (specifically Subsection 1.5.2) Appendices J, K, L, and M

SECTION 6—SCHEDULE

The activities documented in this MAS are anticipated to be completed in accordance with the project schedule below. The schedule is dependent upon the actual project scoped as developed in Activity 1 and may change based on changes in the scope and the availability of tools provided by FEMA. If changes to this schedule are required, the responsible Mapping Partner shall coordinate with FEMA and the other Mapping Partners in a timely manner.

Activities	RESPONSIBLE PARTNER(S)	DATE DUE
Activity 1 – Scoping	CDM	7/01/04
Activity 2 – Outreach	CDM, PRC	9/30/05
Activity 3 – Field Surveys and Reconnaissance	CDM	8/31/04
Activity 6 –Hydrologic Analyses	CDM	01/31/05
Activity 7–Independent QA/QC Review of Hydrologic Analyses	Independent Contractor	01/31/05
Activity 8 – Hydraulic Analyses	CDM	4/31/05
Activity 9 – Independent QA/QC Review of Hydraulic Analyses	Independent Contractor	4/31/05
Activity 10 – Floodplain Mapping (Detailed Riverine or Coastal Analysis)	CDM	7/30/05
Activity 10A - Floodplain Mapping (Re-delineating Using Effective Flood Profiles and Updated Topographic Data)	CDM	7/30/05
Activity 10B – Floodplain Mapping (Refinement or Creation of Zone A)	CDM	7/30/05
Activity 11 – Independent QA/QC Review of Floodplain Mapping (Revised Areas)	Independent Contractor	8/31/05
Task 13 – Digital Flood Insurance Rate Map Production (Non-Revised Areas)	CDM	10/31/05
Task 13A – Independent Quality Assurance/Quality Control Review of Digital Flood Insurance Rate Map Production (Non-Revised Areas)	Independent Contractor	10/31/05

Activities	RESPONSIBLE PARTNER(S)	DATE DUE
Activity 14 – DFIRM Production (Merge Revised and Non-Revised Information)	CDM	11/31/05
Activity 14A – Application of DFIRM Graphic and Database Specifications	CDM	11/31/05
Activity 14A – Independent QA/QC Review of DFIRM Product Meeting FEMA Graphic and Database Specifications	Independent Contractor	11/31/05
Activity 15 – Preliminary DFIRM and FIS Report Distribution	CDM	12/30/05
Activity 16 – Post-Preliminary Processing	CDM, PRC	4/30/06

SECTION 7 – CERTIFICATIONS

Activity 3 (Field Surveys and Reconnaissance) and Activity 4 (Topographic Data Development)

A Registered Professional Engineer or Licensed Land Surveyor shall certify topographic data, in accordance with 44 CFR 65.5(c). Certification of topographic data by the American Society for Photogrammetry and Remote Sensing is also acceptable.

Activity 6 (Hydrologic Analyses). Activity 8 (Hydraulic Analyses), Activity 10 (Floodplain Mapping– Detailed Riverine or Coastal Analysis), and Activity 10B (Floodplain Mapping {Refinement or Creation of Zone A})

- A Registered Professional Engineer shall certify hydrologic and hydraulic analyses and data in accordance with 44 CFR 65.6(f).
- A Registered Professional Engineer or Licensed Land Surveyor shall certify topographic information in accordance with 44 CFR 65.5(c).
- Any levee systems to be accredited will be certified in accordance with 44 CFR 65.10(e).

Activity 10 (Floodplain Mapping– Detailed Riverine), Activity 10A – (Floodplain Mapping {Re-delineating Using Effective Flood Profiles and Updated Topographic Data}), and Activity 10B (Floodplain Mapping {Refinement or Creation of Zone A}), Activity 11 (Independent QA/QC Review of Floodplain Mapping {Revised Areas}), Activity 14 (DFIRM Production {Merging Revised and Non-Revised Information}), and Activity 14A (DFIRM Production {Application of FEMA Graphics and Database Specifications})

The DFIRM metadata files shall include a description of the horizontal and vertical accuracy of the DFIRM base map and floodplain information.

Activity 12 (Base Map Acquisition and Preparation)

- A community official or responsible party shall provide written certification that the digital data meet FEMA minimum standards and specifications.
- The responsible Mapping Partner shall provide documentation that the digital base map can be used by FEMA. Please note that uploading base map data to the MIP does not constitute agreement that

the digital base map can be used by FEMA. Documentation that the digital base map can be used by FEMA will still be required.

Certifications must be made at the time the intermediate data is submitted. For example, if hydrologic data is submitted, certification will be required at the time it is submitted.

SECTION 8 – Technical Assistance and Resources

Project team members may obtain copies of FEMA-issued LOMCs, archived engineering backup data, and data collected as part of the Mapping Needs Assessment Process from the NSP, through their Regional Project Officer.

General technical and programmatic information, such as FEMA 265 and the Quick-2 computer program, can be downloaded from the FEMA Web site (http://www.fema.gov./fhm/). Specific technical and programmatic support may be provided through the NSP; such assistance should be requested through the FEMA Project Officer specified in Section 12 of this MAS.

Project Team members also may consult with the FEMA Regional Project Officer to request support in the areas of selection of data sources, digital data accuracy standards, assessment of vertical data accuracy, data collection methods or subcontractors, and GIS-based engineering and modeling training.

SECTION 9 - Contractors

Pearl River County intends to use the services of CDM as a contractor for this Flood Map Project. Pearl River County shall ensure that the procurement for all contractors used for this Flood Map Project complies with the requirements of 44 CFR 13.36.

SECTION 10 – Reporting

FINANCIAL REPORTING:

Pearl River County shall provide financial reports to the FEMA Regional Project Officer and Assistance Officer in accordance with the terms of the Cooperative Agreement signed for this MAS.

STATUS REPORTING:

Status reports will be submitted on a quarterly basis in accordance with the financial reporting submittals. At a minimum these reports will include a summary of the work as outlined in the Cooperative Technical Partner (CTP)/Map Modernization Project Quarterly Report located in Appendix B of this Mapping Activity Statement. The Project Officer, as needed, may request additional information on status.

Pearl River County may meet with the NSP and/or FEMA more frequently (up to bi-weekly if needed) to review the progress of the project in addition to the quarterly financial and status submittals. These meetings will alternate between FEMA's Regional Office, the Pearl River County office and conference calls as necessary.

SECTION 11 – Project Coordination

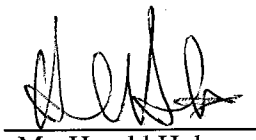
Throughout the project, all members of the Project Team will coordinate, as necessary, to ensure the products meet the technical and format specifications required and contain accurate, up-to-date information. Coordination activities shall include:

- Meetings, teleconferences, and videoconferences with FEMA and other Project Team members bimonthly until DFIRM's are distributed;
- Telephone conversations with FEMA and other Project Team members on a scheduled basis on an ad hoc basis, as required;
- Updates to the MICS, Mapping Needs Update Support System database, and other FEMA status information systems in accordance with requirements in Volumes 1 and 3 of Guidelines and Specifications for Flood Hazard Mapping Partners; and
- E-mail, facsimile transmissions, and letters, as required.

SECTION 12 – Points of Contact

The points of contact for this Flood Map Project are Ms. Laura Algeo, the FEMA Regional Project Officer; Mr. Harold Holmes, the Project Manager for Pearl River County; or subsequent personnel of comparable experience who are appointed to fulfill these responsibilities. When necessary, the any additional assistance of FEMA should be requested through the FEMA Regional Project Officer.

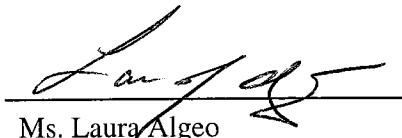
Each party has caused this MAS to be executed by its duly authorized representative.



June 29, 2004

Mr. Harold Holmes, Director of Planning and Development
Project Manager
Pearl River County, MS

Date



July 1, 2004

Ms. Laura Algeo
Regional Project Officer
Federal Emergency Management Agency, Region IV

Date

Appendix A – Project Scoping Template

Appendix B – CTP Quarterly Report